4.1 State Overview

Geography

Arizona is the sixth largest state in the United States, with 114,006 square miles (Economic and Business Research Program, 2003). Major features of the state are shown on the following map titled *Major Features of Arizona*.

Arizona is typically considered a desert state, but is actually comprised of six major terrestrial ecoregions with widely varying geography (National Geographic, 2003). Each of the following six ecoregions cover varying land areas within the state:Arizona Mountain Forests ecoregion

- Chihuahuan Desert ecoregion
- Colorado Plateau Shrublands ecoregion
- Mojave Desert ecoregion
- Sierra Madre Occidental pine-oak forests ecoregion
- Sonoran Desert ecoregion

The Arizona Mountain Forests ecoregion contains a mountainous landscape, much of which is known as the Mogollon Rim, located in approximately the center of the state and running diagonally from southeast to northwest, including portions of Apache, Coconino, Graham, Gila, Greenlee, Maricopa, Mohave, Navajo, Pinal, and Yavapai Counties. This ecoregion includes numerous small to medium-sized cities and towns, such as Eagar, Flagstaff, Globe, Pinetop-Lakeside, Payson, Prescott, and Sedona. Elevations in this zone range from approximately 4,000 to 13,000 feet, resulting in comparatively cool summers and cold winters. Vegetation in this ecoregion is comprised largely of a mix of Scrub Grassland, Mogollon Chaparral Scrubland, Great Basin Conifer Woodland, Rocky Mountain Conifer Forest, and Plains Grassland

The Chihuahuan Desert ecoregion occupies much of the southeastern portion of Arizona, including portions of Cochise, Gila, Graham, Greenlee, Pima, Pinal, and Santa Cruz Counties. Located within this ecoregion are the small to medium-sized desert communities of Bisbee, Douglas, Safford, and Sierra Vista. The elevation varies in this zone from approximately 3,000 to 4,500 feet. Due to its generally higher elevations the Chihuahuan Desert is cooler than its Sonoran Desert counterpart, with dry summers and occasional winter rains.

The Colorado Plateau Shrublands ecoregion covers much of the northern one-third of the state, including portions or all of Apache, Coconino, Mohave, Navajo, and Yavapai Counties. This ecoregion includes numerous small cities and towns, including Holbrook, Page, and Winslow. Elevations in this zone average around 4,000 to 5,000 feet. Vegetation in this ecoregion is comprised mainly of Plains Grassland and Great Basin Desert scrub, as shown in the following map titled *Terrestrial Ecoregions of Arizona*. Temperatures can vary widely in this zone, with comparatively warm summers and cool winters.

The Mojave Desert ecoregion covers a relatively small portion of northwest Arizona, including portions of Coconino and Mojave Counties. This ecoregion includes the communities of Kingman and Bullhead City, as well as a portion of the lower Grand Canyon. The elevation varies in this ecoregion from 1,500 feet to nearly 4,000 feet on some mountains. Typically the climate in this ecoregion is very hot and dry during the summer and comparatively warm during the winter.

The Sierra Madre Occidental pine-oak forest ecoregion is scattered throughout southeast Arizona, including small portions of Cochise, Graham, Greenlee, Pima, Pinal, and Santa Cruz Counties. Located within this ecoregion is the Town of Nogales, several portions of the Coronado National Forest, as well as the Chiricahua and Galiuro Wilderness areas. As a whole, this ecoregion is considered to have mild winters and wet summers, with variation within these regions due to the fluctuation in elevation associated with the forests.

The Sonoran Desert ecoregion is an arid environment that covers most of the southwestern one-third of the state, including portions or all of Gila, Graham, La Paz, Maricopa, Mojave, Pima, Pinal, Yavapai, and Yuma Counties. Located within this ecoregion are the major metropolitan areas of Phoenix and Tucson as well as numerous smaller towns and cities such as Florence, Parker, and Yuma. The elevation varies in this zone from approximately sea level to 3,000 feet. Vegetation in this zone is comprised mainly of Sonoran Desert Scrub, as shown in the following map titled *Terrestrial Ecoregions of Arizona*. Typically the climate in this zone is hot and dry during the summer and comparatively warm during the winter.

The primary component of the Arizona Mountain Forests is the Mogollon Rim, a mountainous area that is the major landform defining the northern from the southern portions of the state. The White Mountains in the central eastern part of the state are another large mountainous area. There are also a series of “mountain islands” in the southeastern corner of the state, including the Graham Mountains. Each of these mountainous areas is associated with relatively dense vegetation, ranging from high grasslands to Ponderosa Pine forests.

Arizona also contains a number of rivers, the largest of which is the Colorado, which runs year round and defines most of the western border of the state. The Colorado River has also created the Grand Canyon, which acts as a major barrier to movement in the northwestern portion of the state. Other large rivers, most of which are controlled via dams and run only occasionally, include the Aqua Fria, Gila, Salt, and the Verde Rivers.

Climate

Arizona's geography results in an extreme climate in comparison with other states and also between locations within the state itself. The state's extreme climate is a major contributor to a number of natural hazards in Arizona, including floods, drought and wildfires.

Average annual temperatures are in the mid-seventies in the Sonoran Desert ecoregion located in the lower half of the state, including cities such as Phoenix, Tucson, and Yuma. By contrast, annual average temperatures are much lower at higher elevations in the Arizona Mountain Forests, Chihuahuan Desert, and Sierra Madre Occidental pine-oak forests ecoregions. Flagstaff, a high mountain community contained within this environment has an average annual temperature of 46.1˚. Average annual temperatures for communities that exist in the Colorado Plateau Shrublands ecoregion fall between these two extremes. The town of Holbrook, for example, has an average annual temperature of 56.8˚.

Summer temperatures may exceed 120˚ in the Sonoran Desert ecoregion. Even relatively high elevations in the Arizona Mountain Forests ecoregion may reach high temperatures, such as in Flagstaff, which has been known to approach 100˚ during the summer. Remarkably, these same locations can reach well below freezing (32˚) in winter. For example, Flagstaff has dropped to –23˚, while even Phoenix winter temperatures have been known to fall into the teens.

These temperature extremes are at least partly the result of Arizona's relatively dry climate. This arid environment is itself a function of a number of factors, including Arizona's separation from nearby major water bodies (i.e., Pacific Ocean, Gulf of California, and Gulf of Mexico), intervening mountainous regions (i.e., Sierra Nevada Mountains), and relatively low elevations across two-thirds of the state.

Average Temperatures by Month for Stations in Arizona for 2006 (Degrees Fahrenheit)

City	Month												Annual
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
Casa Grande	52.4	56.3	61	68.1	76.7	85.8	90.4	88.5	83	71.6	58.8	51.9	70.4
Clifton	46	50.6	56	63.1	72	81.6	84.7	82.8	77.7	66.8	53.5	45.8	65.1
Flagstaff	25.5	28.5	33.5	39.3	46.2	54.6	61.8	60.3	53.9	43.5	32.8	26.5	42.2
Holbrook	35.8	41.6	47.7	54.6	62.6	71.8	77.6	75.6	68.6	56.5	44.6	36.2	56.1
Kingman	42.9	46.8	50.8	57.7	66.7	76.9	82.5	80.9	74.6	63.2	50.7	43.6	61.4
Miami	45.5	49	53.6	60.9	69.6	79.3	83.4	81.5	76.3	65.4	53.2	45.7	63.6
Nogales	45.5	48.5	52.7	58.4	65.7	75	78.9	77.6	73	62.8	52.1	46.1	61.4
Phoenix	54.2	58.2	62.7	70.2	79.1	88.6	92.8	91.4	86	74.6	61.6	54.3	72.8
Prescott	38.5	41.9	45.9	52.3	60.4	70.6	75.5	73.7	67.8	56.8	45.6	38.5	55.6
Safford	44.6	49	54.5	61.4	70.1	79.5	83.2	81.3	75.7	64.7	52.1	44.4	63.4
St. Johns	34.1	39.1	45.2	51.8	60.5	69.6	73.8	71.7	65.6	54.5	42.3	34	53.5
Tucson	51.7	55	59.2	66	74.5	84.1	86.5	84.9	80.9	70.5	58.7	51.9	68.7
Yuma	56	60.3	65	71.4	78.7	87.8	93.1	92.6	87	75.6	62.8	55.3	73.8

Source: State Climate Office, AZ State University, 2007

Total Monthly Precipitation in Arizona (Inches), Selected Cities: 2005													
City	Month												Total
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
Flagstaff	2.18	2.56	2.62	1.29	.8	.43	2.4	2.89	2.12	1.93	1.86	1.83	22.91
Phoenix	.83	.77	1.07	.25	.16	.09	.99	.94	.75	.79	.73	.92	8.29
Tucson	1.04	.96	.88	.33	.20	.28	1.93	2.23	1.24	1.21	.68	1.02	12
Winslow	.46	.53	.61	.27	.36	.30	1.18	1.31	1.02	.90	.55	.54	8.03
Yuma	.45	.35	.36	.15	.05	.03	.31	.70	.50	.31	.17	.51	3.89
Source: Source: State Climate Office, AZ State University, 2007													

Maximum & Average Wind Speed by Month. Selected AZ Cities, 1971-2000 (Miles Per Hour)												
City	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Maximum Wind Speed												
Flagstaff	53	52	49	51	53	51	51	64	51	53	52	53
Phoenix	39	43	53	59	41	54	77	53	51	48	37	47
Tucson	41	48	46	46	43	56	60	60	52	53	53	43
Winslow	53	68	72	66	55	58	51	56	59	55	53	59
Average Wind Speed												
Flagstaff	5.6	6.2	6.2	7.1	6.9	6.5	5	4.1	4.9	5.1	5.8	5.6
Phoenix	5	5.6	6.4	7	7	6.7	7	6.7	6.1	5.4	4.9	4.6
Tucson	7.5	7.8	8.2	8.6	8.5	8.5	8.3	7.9	7.1	7.8	7.6	7.2
Winslow	6.7	7.7	8.7	10.6	10.1	9.9	8.4	7.5	7.4	7.1	6.5	6.3
Source: State Climate Office, AZ State University, 2007.												

The average annual relatively humidity in Arizona is low, particularly in the afternoons. Low humidity levels contribute to decreased winter temperatures, since the atmosphere is unable to retain heat in the evenings. Furthermore, low humidity levels in the summer contribute to high temperatures and very low rainfall levels. Rainfall levels on both an annual basis and during individual months are remarkably low, even at high elevations such as in Flagstaff. It is notable that rainfall periods vary by location, with the Sonoran Desert ecoregion receiving peak monthly rainfall in the winter and the Arizona Mountain Forests ecoregion receiving peak monthly rainfall in the summer.

Average wind speeds are similar across the state, averaging approximately 6 to 9 miles per hour annually, as shown above. However, significant variations exist by location on a monthly basis, as evidenced by Tucson's 71 miles per hour maximum-recorded wind gust.

Arizona Climate Extremes (Through 2006)		
Event	Description	Location
Temperature		
Record Highest Temperature	128°F (29 June 1994)	Lake Havasu City
Record Lowest Temperature	-40°F (7 January 1971)	Hawley Lake
Highest Average Annual Temperature	76.3°F	Lake Havasu City
Lowest Average Annual Temperature	38.3°F	Sunrise Mountain
Consecutive Days Max >= 90	184 days (April-October 1992)	Yuma
Consecutive Days Min <= 32	241 days (October 1976-May 1977)	Fort Valley
Precipitation		
Record Maximum Annual Precipitation	58.92" (1978)	Hawley Lake
Record Minimum Annual Precipitation	0.07"(1956)	Davis Dam
Record Maximum 24-hour Precipitation	11.40" (4-5 September 1970)	Workman Creek
Highest Average Annual Precipitation	38.18 "	Hawley Lake
Lowest Average Annual Precipitation	2.67"	Lake Havasu City
Consecutive Days With Measurable Precipitation	31 days (July-August 1983)	Greer
Consecutive Days with no Measurable Precipitation	352 days (February 1901-January 1902)	Sentinel
Winter Snowfall		
Record Maximum Winter Snowfall	400.9" (1972-73)	Sunrise Mountain
Record Maximum 1-Day Snowfall	38.0" (14 December 1967)	Heber Ranger Station
Highest Average Annual Snowfall	243.0"	Sunrise Mountain
Source: State Climate Office, AZ State University, 2007.		

Population

Arizona's population has increased rapidly since 1990 and is expected to continue growing rapidly. The State's population grew from approximately 3.7 million in 1990 to slightly over 6 million in 2005, an increase of over 2.3 million or approximately 65%. This level of absolute growth is forecast to continue, with the State's population forecast to reach nearly 7.4 million in 2020 and to continue strongly after 2020.

Maricopa County is clearly the largest population center in the State and is expected to remain so for the foreseeable future. Maricopa County grew from approximately 2.1 million in 1990 to approximately 3.6 million in 2005, an increase of nearly 1.5 million or 58%. In 2005, Maricopa County had 60.4% of the State's population, up from 57.9% in 1990. With 15.8% of the State's population in 2005, Pima County is the only other county that had more than 3.5% of the State's population. The State's percentage of population contained in these counties is not forecast to change significantly. In addition to its growing base of permanent residents, Arizona has numerous seasonal visitors and tourists:

- An estimated 300,000 or more winter residents — commonly known as "snowbirds" — were living in Arizona at the height of the 2003-04 winter season (Center for Business Research at Arizona State University, April 2004).
- According to the Arizona Office of Tourism, Arizona had 31 million visitors in 2005 (AZ 2005 Tourism Facts Year End Summary).

Detailed population figures, including those for specific cities and towns, are in the following sections on each county.

Arizona Population, 1990-2040							
State/County	1990	2000	2005	2010	2020	2030	2040
Arizona	3,665,228	5,130,632	6,044,985	6,145,108	7,363,604	8,621,114	9,863,578
Counties							
Apache	61,591	69,423	73,775	78,229	86,533	93,447	99,190
Cochise	97,624	117,755	131,790	146,037	169,717	187,725	201,179
Coconino	96,591	116,320	130,530	141,457	159,345	173,829	186,871
Gila	40,216	51,335	54,445	57,766	64,396	69,879	74,195
Graham	26,554	33,498	34,455	37,441	41,119	44,556	47,623
Greenlee	8,008	8,547	8,300	8,209	8,189	8,289	8,611
La Paz	13,844	19,715	21,190	22,632	25,487	28,074	29,715
Maricopa	2,122,101	3,072,149	3,648,545	4,217,427	5,276,074	6,207,980	7,009,664
Mohave	93,497	155,032	188,035	221,443	281,668	330,581	367,952
Navajo	77,658	97,470	109,985	123,172	147,045	165,547	180,054
Pima	666,880	843,746	957,635	1,070,723	1,271,912	1,442,420	1,585,983
Pinal	116,379	179,727	246,660	364,587	609,720	852,463	1,081,737
Santa Cruz	29,676	38,381	44,055	50,210	61,658	71,033	78,526
Yavapai	68,145	167,517	205,105	241,667	305,343	355,462	390,954
Yuma	106,895	160,026	188,480	218,810	271,361	316,158	351,299
Source: Figures for 1990, 2000 & 2005, Arizona Department of Commerce, April 2007; 2010-2040, Arizona Department of Economic Security, March 2007.							

Economy

The major employment sectors in Arizona include aerospace, electronics and semi-conductor manufacturing. Tourism, business services and back-office operations are also important sectors. Arizona's original export activities, agriculture and mining remain significant in many rural parts of the State. Based on sheer size, the real estate and rental industries, the diverse tourism sector, and government are the largest economic sectors in Arizona. Relative to the national average, the construction sector is also unusually large because of the State's rapid growth.

Arizona Key Employment Sectors, 2005		
Industry	Employment	Wages
Retail Trade	317,348	$28,378
Health Care & Social Assistance	257,786	$42,347
Construction	237,853	$39,214
Administrative & Support	233,870	$28,467
Accommodation & Food Services	231,833	$16,234
Educational Services	213,767	$40,894
Manufacturing	186,669	$54,252
Public Administration	147,049	$46,486
Finance & Insurance	128,114	$55,507
Professional, Scientific & Technical	123,803	$54,470
Source: AZ Dept of Economic Security with the US Dept of Labor, Bureau of Statistics April 2007.		

Agriculture

In 2005 there were approximately 10,000 farms and ranches in Arizona. Farms with annual sales of more the $10,000 were approximately 30% of that total; many of the rest were sidelines for operators who held other jobs. Agriculture land covered over 26 million acres. Only 5% of farmland was devoted to crops; by far the largest share of the land was used for livestock. Irrigation was used on 68% of all cropland.

Manufacturing

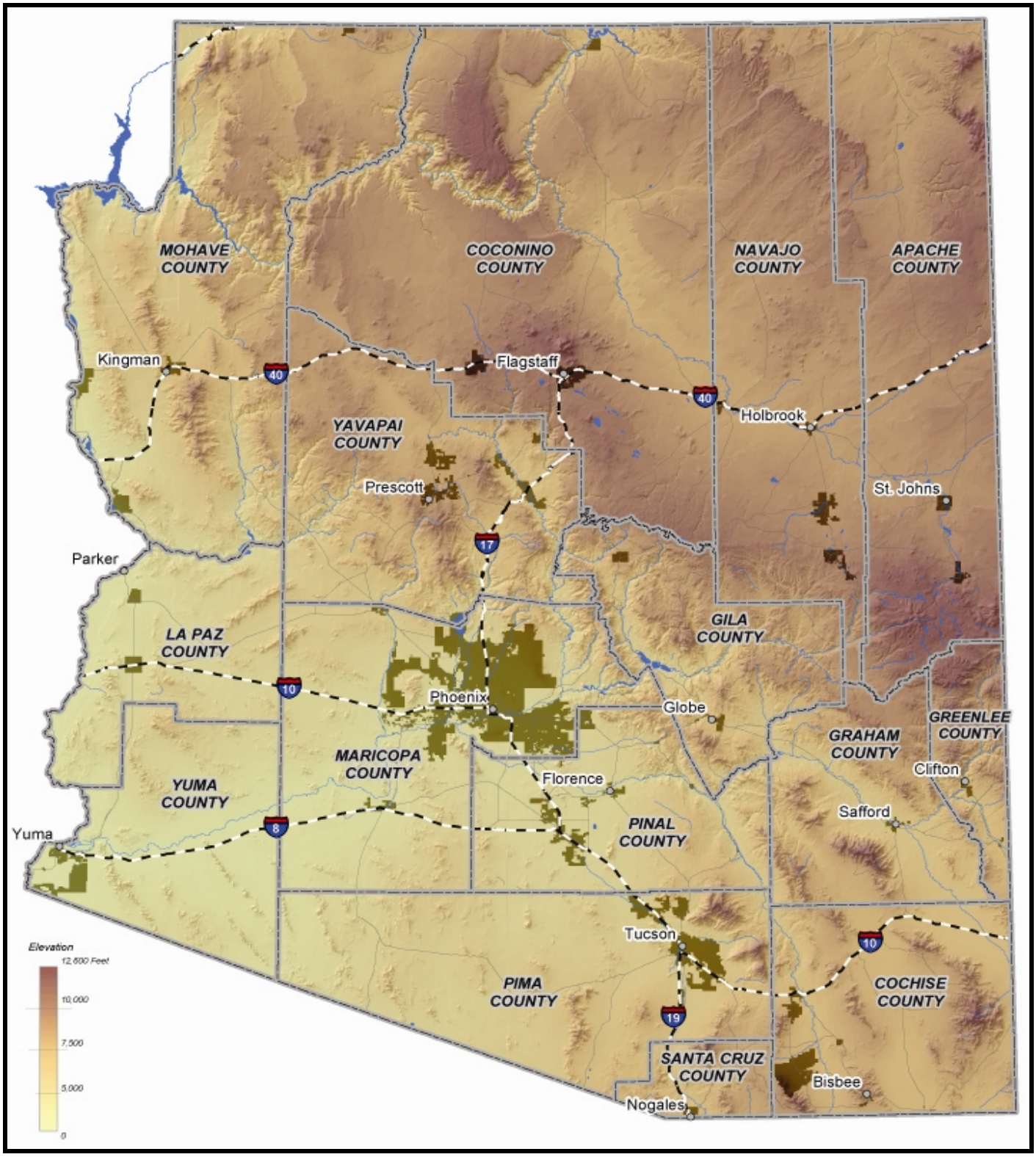
Manufacturing is a relative newcomer to the economy of Arizona, but since 1950 it has become one of the State's major sources of income, rivaling the five C's – cattle, copper, cotton, citrus and climate – on which the State's economy previously depended. Because of military needs and the shift of the nation's defense from coastal to inland areas during World War II, many new manufacturing plants, especially aluminum, were established. The greatest industrial growth is in the electronics and aviation fields, centered chiefly in the Phoenix and Tucson areas. In the late 1990's, the leading manufacturers were firms engaged in the production of electronics and electric equipment, particularly semiconductors, radios and televisions and printed circuit boards, manufacturers of transportation equipment, primarily aircraft and aircraft parts, guided missiles and vehicles used in space and the makers of instruments and related equipment. Other leading manufacturers included food processors, firms making metal products and printers and publishers.

Mining

A phenomenal rise in copper price resulted in a record value of $6.7 billion of mineral production for Arizona. That value ranked the State first in the nation according to preliminary data released by the US Geological Survey (USGS). The value of copper reached $5 billion, driven by prices that, for the first time, broke $4 per pound. Also contributing significantly were strong molybdenum prices and the second largest output of sand and gravel in the United States. Arizona also ranked first in the value of mineral gemstones. Exploration activity for copper and uranium were strong; the latter benefiting from a price that doubled during the year ("Arizona Mining Update – 2006", AZ Dept., of Mines and Mineral Resources).

Tourism

Direct travel expenditures by all visitors to Arizona increased 9.9% to $17.5 billion in 2005, a record year for Arizona Tourism. The State hosted 31 million domestic and international overnight visitors, equal to roughly 85,000 visitors per day in 2005. Direct travel spending in the State generated $456 million in local taxes and $583 million in state taxes during 2005. Travel spending in the State generated a total impact of 313,000 jobs and earning of $9.3 billion in 2005.



LEGEND

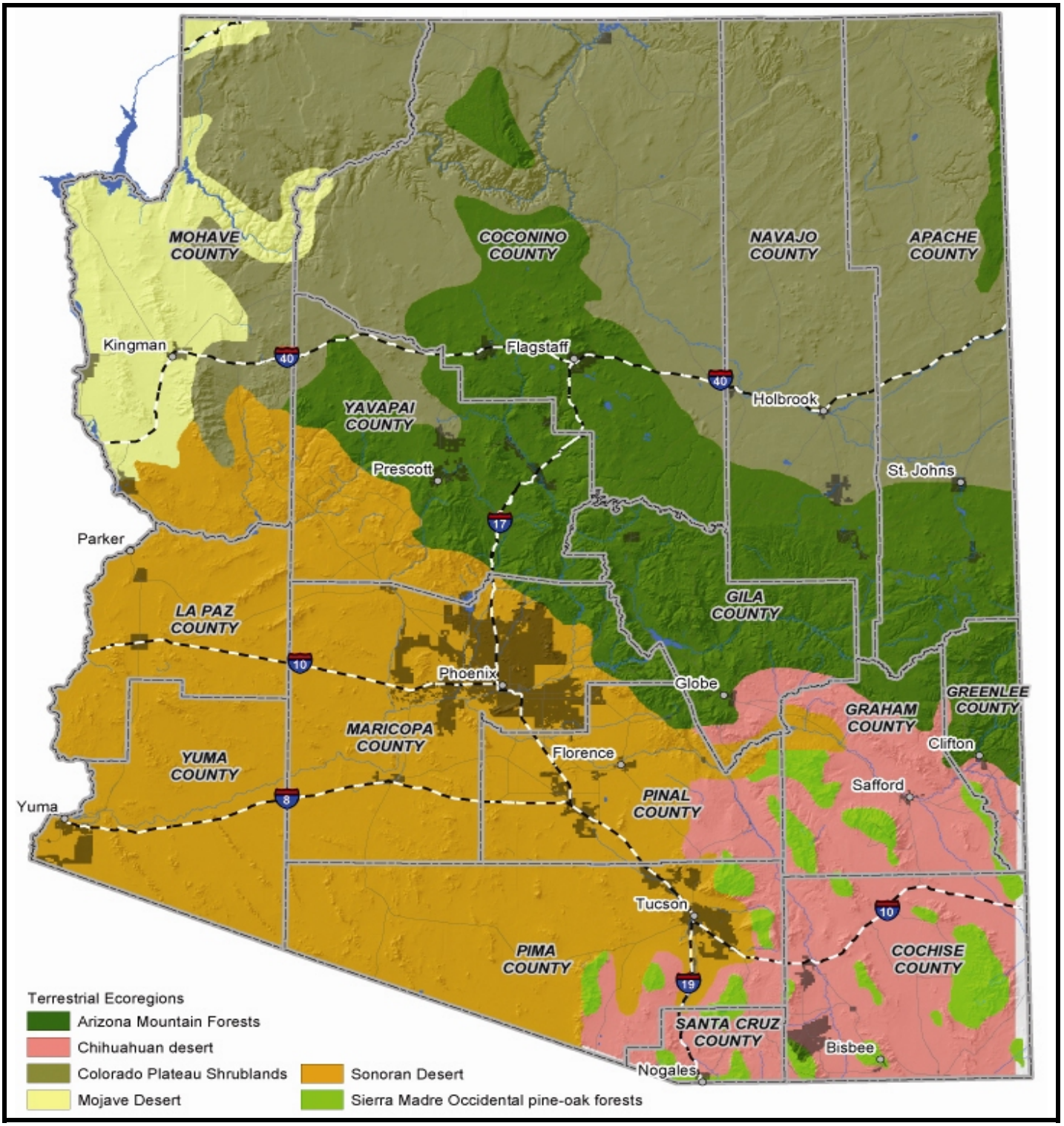
- Interstate
- City
- County
- County Seat
- Highway
- Major Stream
- Lake

N

0 25 50
Miles

State of Arizona
Multi-Hazard Mitigation Plan

Map 1
Major Features of Arizona



LEGEND

- Interstate
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N

0 25 50

Miles

State of Arizona
Multi-Hazard Mitigation Plan

Map 2
Terrestrial Ecoregions of Arizona